

Chapter 3: Hints & Answers

- 3.3 With 256 colors, we have 8 Mbits per screen.
- 3.6 100 songs in CD audio and 1400 songs using MP3.
- 3.10 First assume 64 kbps H.261 video; then assume 1.5 Mbps H.261 video.
- 3.12 You will need the approximation $(1 - p)^n \approx e^{-np}$ for large n and small p .
- 3.17 (b) After answering the question, explain why blurring the image can help with the aliasing problem.
- 3.18 (c) 128 kbps
- 3.21 (a) 2^{2m}
 (b) You need to consider the distortion that results from having all the values in the range V to $2V$ mapped onto $V - \Delta/2$, and all values from $-V$ to $-2V$ mapped onto $-V + \Delta/2$.
- 3.23 $\text{SNR} = 192V^2$
- 3.26 Note that the Fourier series in the book has a typographical error, the coefficients should be divided by n .
- 3.29 (d) 39863 bps
- 3.30 64.2 dB
- 3.36 (a) For $m = 4$, $R = 24$ Mbps, for $m = 8$, $R = 48$ Mbps.
- 3.40 The output of the upper demodulator is $A_k \cos(\phi) - B_k \sin(\phi)$.
- 3.44 Compare the attenuation at 100 kHz and at 1 MHz for the distances 1 km and at 10 km. What do the results imply about the bandwidth at these distances?
- 3.48 -30 dBm corresponds to 10^{-3} milliwatts; 6 dBm corresponds to 4 milliwatts.
- 3.53 Which factors affect cost and hence motivate deployment of these technologies?
- 3.58 (a) For random error vector channel, 9/32 of error vectors cause detection failure.
- 3.62 The internet checksum = 01001111 01001101.
- 3.66 (d) Count the number of possible rectangular error patterns by finding the number of ways of picking two rows and the number of ways of picking two columns.
- 3.69 $d_{\min} = 4$.
- 3.73 $N < 48$.